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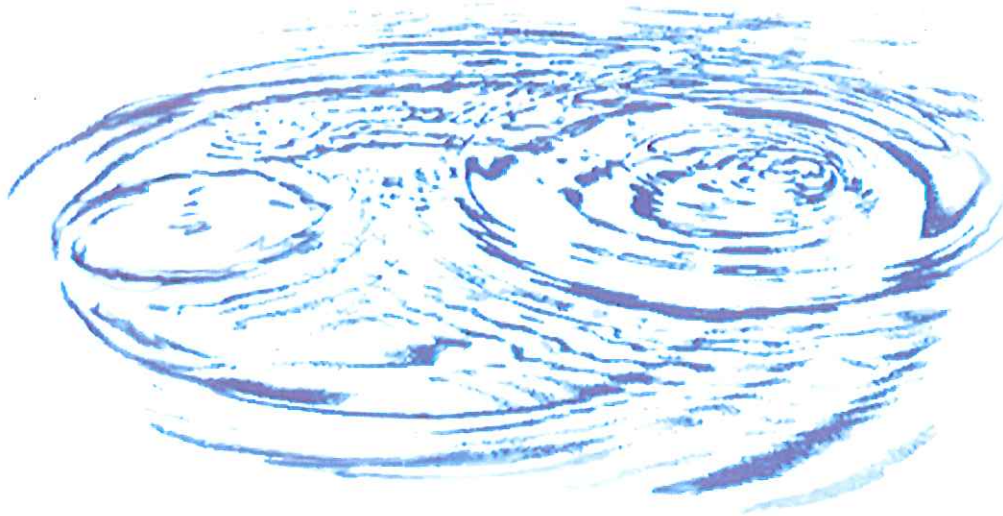
APPENDIX J

2005 VERSION OF  
URBAN WATER  
MANAGEMENT PLAN



City of Alhambra

# Urban Water Management Plan



December 2005



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## Chapter 1

### INTRODUCTION

*Section 10617*

*"Urban Water Supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.*

#### 1.1 URBAN WATER MANAGEMENT PLAN

This Urban Water Management Plan (hereinafter Plan or UWMP), is an update to the City of Alhambra's (hereinafter City of Alhambra or City) most recent plan, dated December 2000, which was prepared according to the UWMP Act<sup>1</sup> (Act), California Water Code Division 6, Part 2.6. A copy of the UWMP Act is located in Appendix A.

The UWMP Act requires every "urban water supplier" to prepare and adopt an Urban Water Management Plan (at least once every five years on or before December 31, in years ending in five and zero) and make any amendments or changes which are indicated by the review. The UWMP Act defines an "urban water supplier" to be "a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually." According to this definition in the UWMP Act, the City of Alhambra is required to submit a Plan for 2005.

This Plan examines the activities of the City as a retail water supplier and describes the management of both the Main San Gabriel Basin (Main Basin) and the Raymond Basin. This plan has been prepared in accordance with the Act, which includes the following.

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<sup>1</sup> Water Code Sections 10610 through 10656

- The management of urban water demands and efficient use shall be actively pursued to protect both the people of the state and their water resources.
- The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
- Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

## **1.2 AGENCY COORDINATION [Section 10620 (a) – (f)]**

### *Section 10620*

*(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).*

*(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

*(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.*

*(d) (1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.*

*(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

*(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.*

*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

As part of the City's coordination for the preparation of its 2005 UWMP, the City sent a notification letter out to the City Clerk and its wholesale agency, San Gabriel Valley Municipal Water District (SGVMWD), inviting their participation in the development of the 2005 Plan. A copy of the notification letters is located in Appendix B. In addition, the City of Alhambra participated in a staff review and comments from the review were incorporated in the finalization of this Plan.

The City of Alhambra has actively encouraged community participation in its urban water management planning effort. The draft Plan was made available for public review from November 7, 2005 through December 12, 2005 and a public hearing was



held on December 12, 2005 at 5:30 pm in City Council Chambers. A copy of the notice for a public hearing for the City is located in Appendix C. Upon completion of the public hearing, the City Council adopted the draft Plan, including modifications resulting from the public hearing, as its 2005 UWMP (Appendix D).

### **1.3 WATER MANAGEMENT TOOLS [Section 10620 (f)]**

#### *Section 10620*

*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

This Plan describes the management tools and options used by the City of Alhambra to maximize local resources and minimize the need to import water. The management tools and options used by the City include groundwater management (Chapter 3), Demand Management Measures (Chapter 5), Future Water Supply Projects (Chapter 6) and Recycled Water Use (Chapter 8). The water supply for the City comes from three sources: (1) groundwater from wells in the Main Basin; (2) groundwater from wells in the Raymond Basin; and (3) through direct delivery of treated imported water from the Metropolitan Water District of Southern California (MWD). Through groundwater management, conservation programs, well maintenance, capital improvement programs, and recycled water use, the City has been able to minimize its reliance on imported water.

### **1.4 CHANGES TO THE PLAN**

#### *Section 10621*

- a) *Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.*
- b) *Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*
- c) *The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

There are new amendments added to the Plan and some reorganization of the water code sections since the last update in 2000. The additions and changes are as follows:

1. Senate Bill 610, Land & Water Use Planning Bill
2. Assembly Bill 901, Water Quality Information
3. Senate Bill 672, Minimize Need to Import Water
4. Senate Bill 1348, Consider Demand Management Measures Implementation  
When Evaluating Eligibility
5. Senate Bill 1384, Wholesale Agency Water Supply Information
6. Senate Bill 1518, Recycled Water
7. Assembly Bill 105, Deposit Urban Water Management Plans in State Library
8. Senate Bill 318, Desalination

The City of Alhambra has reviewed its Urban Water Management Plan and included appropriate amendments and changes.

## Chapter 2

### DESCRIPTION OF SERVICE AREA

#### *Section 10631*

*(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

#### **2.1 BACKGROUND [Section 10631 (a)]**

The City of Alhambra is a member agency of SGVMWD. The City of Alhambra is a local water purveyor that serves retail customers within its service area. The City has the legal right to pump groundwater from both the Main Basin and the Raymond Basin and can purchase imported water from MWD through an agreement with the Upper San Gabriel Valley Municipal Water District (USGVMWD).

Currently the City pumps groundwater only from the Main Basin because the City's well located within Raymond Basin is currently inactive. The City has eight active wells located within the Main Basin, which are Wells No. 7, No. 9, No. 11, No. 13, No. 14, No. 15, Longden 1, and Longden 2. In addition the City has three inactive wells, which are Wells No. 2, No. 8, and No. 12. The City of Alhambra also has six reservoir locations, five booster pump stations and one MWD connection. A map of Alhambra's service area and active water facilities in the Main Basin are shown on Plate 1.

The City of Alhambra's distribution system is divided into two major pressure zones: northern and southern. These zones have been established to accommodate the vertical elevation change within the City. The northern zone is comprised of four different areas, the Alta Vista Service hilltop area, the Palatine hilltop service area, the Garvey hilltop service area and the Siwanoy hilltop service area. The northern zone, which serves water to the upper of the two elevations, lifts water to the four different areas through separate booster pump stations, drawing water from an associated reservoir. The Alta Vista Service hilltop area is supplied by system water from the

northern pressure zone. The Palatine hilltop service area is supplied by the Emery Park Reservoir (0.1 mgd) and a two-pump booster station. The Garvey hilltop service area is supplied by the Garvey Reservoir (1.0 mgd) and a two-pump booster station. The Siwanoy hilltop service area is supplied by a two-pump booster station.

The major source of water supply for the City of Alhambra comes from its eight active wells located within the Main Basin. These wells pump groundwater into the southern zone and after treatment or blending is delivered to the City's customers. The City also receives imported water from MWD through an agreement called the Cooperative Water Exchange Agreement (CWEA), which is discussed in greater detail in Chapter 3. The City receives the imported water through MWD's USG-5 connection which is controlled by the City's pressure-reducing valve.

## **2.2 DESCRIPTION OF SERVICE AREA [Section 10631 (a)]**

The City of Alhambra is coterminous with the cities of South Pasadena and San Marino on the north, San Gabriel on the east and Monterey Park on the south. The City occupies an area of 7.68 square miles and is situated eight miles east of the City of Los Angeles within the San Gabriel Valley. The City has many residential communities and a growing number of businesses. According to the City of Alhambra's 2004 Water Master Plan, the City's residential (single-family and multi-family) sector makes up about 54.9 percent of the total land use within the City. The City's Master Plan provides various land use based on its 1975 General Plan, however, land use within the City has changed very little since 1975. Other land use within the City includes 12 percent for public use, 6 percent for commercial, 5.2 percent for manufacturing, 0.3 percent for utilities, 1.0 percent for parking, 18.9 percent for streets and highways and the remainder 1.7 percent is vacant land. The location of the City of Alhambra and the boundaries of San Gabriel Valley are shown on Plate 2.

The San Gabriel Valley is bounded on the north by the San Gabriel Mountains, on the west by the San Rafael and Merced Hills, on the south by the Puente Hills and the San Jose Hills, and on the east by a low divide between the San Gabriel River System and the Upper Santa Ana River System.

Within the San Gabriel Valley is the San Gabriel River, and its tributary, the Rio Hondo, which drain an area of about 450 square miles upstream of Whittier Narrows. Whittier Narrows is a low gap between the Merced and Puente Hills, just northeast of the City of Whittier, through which the San Gabriel River and the Rio Hondo flow to the coastal plain of Los Angeles County. Whittier Narrows is a natural topographic divide and a subsurface restriction to the movement of ground water between the San Gabriel Valley and the coastal plain. Of the 490 square miles of drainage area upstream of Whittier Narrows, about 167 square miles are valley lands and 323 square miles are mountains and foothills.

### **2.3 CLIMATE [Section 10631 (a)]**

The City of Alhambra has attracted residents who enjoy a climate of warm summers and mild winters with moderate rainfall. Total rainfall for the 2004 season was 18.70 inches (in.), with an average annual rainfall in Alhambra of approximately 1.5 in. Average temperature in the City ranges from 56.6° Fahrenheit (F) in January to 76.6°F in August. Average precipitation and average temperature in Alhambra is shown on Tables 1 and 4.

### **2.4 CURRENT/PROJECTED POPULATION AND DEMOGRAPHIC FACTORS [Section 10631 (a)]**

"The Alhambra tract" located within the City of Alhambra was the first tract of homes in Southern California to have water delivered via iron pipes to the tract. The development of this system to deliver water directly to residential homes attracted many settlers to the area. Much of the town was planted with orange groves and vineyards. In 1910 the population of the Alhambra area was 5,000 and in 1915, Alhambra became a chartered city. By the end of the 1930's, the population was nearly 40,000. A post-war boom in building occurred in the late 1940's and subdivisions of homes were constructed. In the 1950s, modern apartment buildings sprang up among the many residential communities and now more than half of Alhambra's population live in multiple family structures. Currently the Alhambra Central Business District is located along Main Street. The current population of the City of Alhambra is about 87,000. The

following tabulation provides a summary of the current and projected population for the next 20 years in five year increments. The source of the population data is the City of Alhambra's 2004 Water Master Plan.

|                    | YEAR   |        |        |        |         |         |
|--------------------|--------|--------|--------|--------|---------|---------|
|                    | 2000   | 2005   | 2010   | 2015   | 2020    | 2025    |
| <b>Population:</b> | 86,162 | 87,000 | 92,633 | 97,842 | 103,353 | 109,164 |

## Chapter 3

### SOURCES OF SUPPLY

#### 3.1 EXISTING AND PLANNED SOURCES OF WATER SUPPLY [Section 10631(b)]

*Section 10631*

*b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

The City of Alhambra's Main Source of water supply consists of groundwater produced from the Main Basin. The City of Alhambra has a legal right to pump from the Raymond Basin, but currently does not operate any active wells within Raymond Basin. The management of both basins is described in Section 3.2 of this Plan.

Although there is no limit on the quantity of water that may be extracted by parties to the Main Basin adjudication, including the City of Alhambra, groundwater production in excess of water rights, or the proportional share (pumper's share) of the Operating Safe Yield, requires purchase of imported replacement water to recharge the Main Basin. The City of Alhambra has a pumper's share of 4.45876 percent of the Operating Safe Yield. For the 2004-05 fiscal year, the Operating Safe Yield was established at 170,000 acre-feet; therefore the City of Alhambra's pumping right was equal to 7,579.89 acre-feet. If the City pumps more than the allocated amount of water, replacement water must be purchased from SGVMWD.

Under the adjudication of the Raymond Basin, the Court determined who has a right to extract water and the maximum annual amount of water allowed to be pumped by each producer. The City of Alhambra has a "Decreed Right" of 1,031 acre-feet.

In addition to groundwater pumped from Main Basin and Raymond Basin, the City of Alhambra can purchase imported water from MWD. The City's wells located in

the Main Basin are located in a portion of the Main Basin that does not benefit from the replenishment and recharging efforts of the Main San Gabriel Basin Watermaster. Although the City of Alhambra is not a member agency of MWD, the City can receive imported water through the CWEA. The City of Alhambra receives direct delivery of water from MWD's service connection USG-5 thereby reducing the amount of water extracted from the Main Basin.

The CWEA is an agreement between the City of Alhambra along with SGVMWD, USGVMWD, MWD, and the Main San Gabriel Basin Watermaster. The CWEA was designed to reduce a localized condition that exists in the westerly portion of the Main Basin, the Alhambra Pumping Hole (APH). The APH receives little replenishment due to its hydrogeologic characteristics. Seven producers extract water from the pumping hole, which has resulted in declining water level elevation. To mitigate the condition, it was agreed the City of Alhambra would receive direct delivery of water from MWD's service connection USG-5 and, in exchange, would reduce its extractions from the pumping hole by an equivalent amount. CWEA is cooperatively financed by the City of Alhambra, SGVMWD, USGVMWD, and Main San Gabriel Basin Watermaster.

The City of Alhambra's historic annual water supply including both groundwater and MWD supplies is shown on Table 2. In 2004-05, the City pumped 9,784.72 acre-feet of groundwater and received 2,998 acre-feet of imported water from MWD. The projected amount of water supply from groundwater production for the City for the next 20 years is estimated to increase at the same rate as the population. Table 3 summarizes the current and projected water supply from groundwater production from fiscal year 2004-05 through 2024-25. In addition, the City of Alhambra will purchase imported water from MWD through the CWEA. The projected amount of water supply from MWD for the City for the next 20 years will be about 3,000 acre-feet per year as shown on Table 3.



### 3.2 GROUNDWATER MANAGEMENT [Section 10631 (b)(1) – (4)]

#### *Section 10631(b)*

*If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

*1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.*

*2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court of the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.*

*3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

*4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

The City of Alhambra has not adopted specific groundwater management plans for the Main Basin and Raymond Basin. The management of the water resources in the Main Basin is based upon Watermaster Services under two Court Judgments: San Gabriel River Watermaster (River Watermaster)<sup>2</sup> and Main San Gabriel Basin Watermaster<sup>3</sup>. The City of Alhambra was a defendant in the Long Beach Judgment and as such has significant participation. In addition, Alhambra was a plaintiff in the court action that resulted in the creation of the Main San Gabriel Basin Watermaster. Alhambra is also included in the Main Basin Management described in the Main San Gabriel Basin Watermaster document entitled "Five-Year Water Quality and Supply Plan." Section 3.2 provides a description of the two Judgments and the Five Year Water Quality and Supply Plan that make up the groundwater management plan for the Main Basin.

<sup>2</sup> Board of Water Commissioners of the City of Long Beach, et al., v. San Gabriel Valley Water Company, et al., Los Angeles County Case No. 722647, Judgment entered September 24, 1965.

<sup>3</sup> Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al., Los Angeles County Case No. 924128, Judgment entered January 4, 1973.

Management of the water resources of the Raymond Basin is based on the Raymond Basin Judgment. The City of Alhambra is a defendant in the Raymond Basin Judgment and as such as participation. Section 3.3 provides a description of the Judgment that makes up the groundwater management plan for the Raymond Basin.

Both groundwater basins (Main Basin and Raymond Basin) utilized by the City of Alhambra have been adjudicated and are well-managed. In addition, the Department of Water Resources (DWR) Bulletin 118 does not identify the Main Basin or the Raymond Basin as being in overdraft.

### **3.3 MAIN SAN GABRIEL BASIN MANAGEMENT**

#### **3.3.1 LONG BEACH JUDGMENT**

On May 12, 1959, the Board of Water Commissioners of the City of Long Beach, the Central Basin Municipal Water District (CBMWD) and the City of Compton, as plaintiffs, filed an action against the San Gabriel Valley Water Company and 24 other producers of groundwater from the San Gabriel Valley as defendants. This action sought a determination of the rights of the defendants in and to the waters of the San Gabriel River system and to restrain the defendants from an alleged interference with the rights of plaintiffs and persons represented by CBMWD in such waters. After six years of study and negotiation, a Stipulation for Judgment, was filed on February 10, 1965, and Judgment (Long Beach Judgment) was entered on September 24, 1965, as shown in Appendix E.

Under the terms of the Long Beach Judgment, the water supply of the San Gabriel River system was divided at Whittier Narrows, between San Gabriel Valley upstream and the coastal plain of Los Angeles County downstream. According to the Long Beach Judgment, the area downstream from Whittier Narrows (Lower Area), the plaintiffs and those they represent, are to receive a quantity of usable water annually from the San Gabriel River system comprised of usable surface flow, subsurface flow at Whittier Narrows and water exported to the Lower Area. This annual entitlement is guaranteed by the area upstream of Whittier Narrows (Upper Area), the defendants,

and provision is made for the supply of Make-up Water by the Upper Area for years in which the guaranteed entitlement is not received by the Lower Area.

Make-up Water is imported water purchased by the Main San Gabriel Basin Watermaster and delivered to agencies within CBMWD to satisfy obligations under the Long Beach Judgment. The entitlement of the Lower Area varies annually, dependent upon the 10-year average annual rainfall in San Gabriel Valley for the 10 years ending with the year for which entitlement is calculated.

The detailed operations described in the Long Beach Judgment are complex and require continuous compilation of data so that annual determinations can be made to assure compliance with the Long Beach Judgment. In order to do this, a three-member Watermaster was appointed by the Court, one representing the Upper Area parties nominated by and through USGVMWD, one representing the Lower Area parties nominated by and through the CBMWD and one jointly nominated by USGVMWD and CBMWD. This 3-member board is known as the River Watermaster.

The River Watermaster meets periodically during the year to adopt a budget, to review activities affecting water supply in the San Gabriel River system area, to compile and review data, to make its determinations of usable water received by the Lower Area, and to prepare its annual report to the Court and to the parties. The River Watermaster has rendered annual reports for the water years 1963-64 through 2003-04 and operations of the river system under that Court Judgment and through the administration by the River Watermaster have been very satisfactory since its inception.

### **3.3.2 MAIN BASIN JUDGMENT**

One major result of the Long Beach Judgment was to leave the Main Basin free to manage its water resources so long as it meets its downstream obligation to the Lower Area under the terms of the Long Beach Judgment. USGVMWD intervened in the Long Beach case as a defendant in order to enforce the provisions of a Reimbursement Contract which was incorporated into the Long Beach Judgment to

assure that any Make-up Water obligations under the terms of the Long Beach Judgment would be satisfied.

The Upper Area then turned to the task of developing a water resources management plan to optimize the conservation of the natural water supplies of the area. Studies were made of various methods of management of the basin as an adjudicated area and a report thereon was prepared for the Upper San Gabriel Valley Water Association, an association of water producers in the Main Basin. After due consideration by the Association membership, USGVMWD was requested to file as plaintiff, and did file, an action on January 2, 1968, seeking an adjudication of the water rights of the Main Basin and its Relevant Watershed. After several years of study (including verification of annual water production) and negotiations, a stipulation for entry of Judgment was approved by a majority of the parties, by both the number of parties and the quantity of rights to be adjudicated. Trial was held in late 1972 and Judgment (Main Basin Judgment) was entered on January 4, 1973, as shown in Appendix F.

Under the terms of the Main Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its Relevant Watershed were adjudicated. The Main Basin Judgment provides for the administration of the provisions of the Judgment by a nine-member Watermaster. Six of those members are nominated by water producers (producer members) and three members (public members) are nominated by SGVMWD and USGVMWD, which overlie most of the basin. The nine-member board employs a staff, an attorney and a consulting engineer. The Main San Gabriel Basin Watermaster holds public meetings on a regular monthly basis through the year. A copy of the Main San Gabriel Basin Watermaster's Rules and Regulations is located in Appendix G.

The Main Basin Judgment does not restrict the quantity of water which parties may extract from the Main Basin. Rather, it provides a means for replacing all annual extractions in excess of a Party's annual right to extract water with Supplemental Water.

The Main San Gabriel Basin Watermaster annually establishes an Operating Safe Yield for the Main Basin which is then used to allocate to each Party its portion of the Operating Safe Yield which can be produced free of a Replacement Water Assessment. If a producer extracts water in excess of his right under the annual Operating Safe Yield, he must pay an assessment for Replacement Water which is sufficient to purchase one acre-foot of Supplemental Water to be spread in the basin for each acre-foot of excess production. All water production is metered and is reported quarterly to the Main San Gabriel Basin Watermaster.

In addition to Replacement Water Assessments, the Main San Gabriel Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Court Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any make-up Obligation under the Long Beach Judgment and to supply fifty percent of the administration costs of the River Watermaster service. The Main San Gabriel Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase so long as such transfers meet the requirements of the Judgment. There is also provision for Cyclic Storage Agreements by which Parties and non-parties may store imported supplemental water in the Main Basin under such agreements with the Main San Gabriel Basin Watermaster pursuant to uniform rules and conditions and Court approval.

The Main Basin Judgment provides that the Main San Gabriel Basin Watermaster will not allow imported water to be spread in the main part of the Main Basin when the groundwater elevation at the Baldwin Park Key Well (Key Well) exceeds 250 feet; and that the Main San Gabriel Basin Watermaster will, insofar as practicable, spread imported water in the Main Basin to maintain the groundwater elevation at the Key Well above 200 feet. One of the principal reasons for the limitation on spreading imported water when the Key Well elevation exceeds 250 feet is to reserve ample

storage space in the Main Basin to capture native surface water runoff when it occurs and to optimize the conservation of such local water. Under the terms of the Long Beach Judgment, any excess surface flows that pass through the Main Basin at Whittier Narrows to the Lower Area (which is then conserved in the Lower Area through percolation to groundwater storage) is credited to the Upper Area as Usable Surface Flow.

### **3.3.3 OPERATIONS OF THE MAIN SAN GABRIEL BASIN GROUNDWATER BASIN**

Through the Long Beach Judgment and the Main Basin Judgment, operations of the Main Basin are optimized to conserve local water to meet the needs of the parties of the Main Basin Judgment.

The City of Alhambra utilizes MWD USG-5 to receive treated, imported water as part of the CWEA to reduce the groundwater extractions from the western portion of the Main Basin and the associated drawdown concerns. Information regarding the CWEA was described in Section 3.1.

Imported water for groundwater replenishment is delivered through the flood control channels and diverted and spread at spreading grounds through the Main San Gabriel Basin Watermaster's agreement with the Los Angeles County Department of Public Works (DPW). Groundwater replenishment utilizes imported water and is considered Replacement Water under the terms of the Main Basin Judgment. It can be stored in the Basin through Cyclic Storage agreements, authorized by terms of the Main Basin Judgment, but such stored water may be used only to supply Supplemental Water to the Main San Gabriel Basin Watermaster.

The Main San Gabriel Basin Watermaster has entered into a Cyclic Storage Agreement with each of the three municipal water districts. The first is with MWD and USGVMWD, which permits MWD to deliver and store imported water in the Main Basin in an amount not to exceed 100,000 acre-feet for future Replacement Water use. The second Cyclic Storage Agreement is with Three Valleys Municipal Water District

(TVMWD) and permits MWD to deliver and store 40,000 acre-feet for future Replacement Water use. The third is with SGVMWD and contains generally the same conditions as the agreement with MWD except that the stored quantity is not to exceed 40,000 acre-feet. In addition, the City of Alhambra has a Cyclic Storage account and is allowed to store a maximum of 10,000 acre-feet at any given time. As of June 30, 2005 the City of Alhambra had 540.94 acre-feet in its Cyclic Storage account.

Imported Make-up Water is often delivered to lined stream channels and conveyed to the Lower Area. Make-up Water is required to be delivered to the Lower Area by the Upper Area when the Lower Area entitlement under the Long Beach Judgment exceeds the usable water received by the Lower Area. Imported water is used to fulfill the Make-up Water Obligation when the amount of Make-up Water cannot be fulfilled by reimbursing the Lower Area interests for their purchase of recycled water. The amount of recycled water for which reimbursement may be made as a delivery of Make-up Water is limited by the terms of the Long Beach Judgment to the annual deficiency in Lower Area Entitlement water or to 14,735 acre-feet, whichever is the lesser quantity.

### **3.3.4 FIVE YEAR WATER QUALITY AND SUPPLY PLAN**

The Main San Gabriel Basin Watermaster was created in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. The Main San Gabriel Basin Watermaster manages the water supply of the Main San Gabriel Groundwater Basin. During the late 1970s and early 1980s, significant groundwater contamination was discovered in the Main Basin. The contamination was caused in part by past practices of local industries that had carelessly disposed of industrial solvents referred to as Volatile Organic Compounds, (VOCs), as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts were undertaken at the local, state, and federal level.

Local water agencies adopted a joint resolution in 1989 regarding water quality issues that stated the Main San Gabriel Basin Watermaster should coordinate local

activities aimed at preserving and restoring the quality of groundwater in the Main Basin. The joint resolution also called for a cleanup plan. In 1991, the Court granted the Main San Gabriel Basin Watermaster the authority to control pumping for water quality purposes. Accordingly, the Main San Gabriel Basin Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included development of a Five-Year Water Quality and Supply Plan, updating it annually, submitting it to the California Regional Water Quality Control Board, Los Angeles Region, and making it available for public review by November 1 of each year. A copy of the most recent Five-Year Water Quality and Supply Plan is located in Appendix H.

The Main San Gabriel Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of its Rules and Regulations. The objective is to coordinate groundwater-related activities so that both water supply and water quality in the Main Basin are protected and improved. Many important issues are detailed in the Five-Year Plan, including how the Main San Gabriel Basin Watermaster plans to:

1. Monitor groundwater supply and quality;
2. Develop projections of future groundwater supply and quality;
3. Review and cooperate on cleanup projects, and provide technical assistance to other agencies;
4. Assure that pumping does not lead to further degradation of water quality in the Basin;
5. Address Perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Basin;
6. Develop a cleanup and water supply program consistent with the United States Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and



7. Coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operable Unit (BPOU) cleanup and water supply plan.

The Main San Gabriel Basin Watermaster has worked with state and federal regulators, along with local water companies to clean up water supplies. Section 28 of the Main San Gabriel Basin Watermaster's Rules and Regulations require all producers (including the City of Alhambra) to submit an application to 1) construct a new well, 2) modify an existing well, 3) destroy a well, or 4) construct a treatment facility. The Main San Gabriel Basin Watermaster prepares a report on the implications of the proposed activity. As a party to the Main Basin Judgment, the City of Alhambra reviews a copy of these reports and is provided the opportunity to submit comments on the proposed activity before the Main San Gabriel Basin Watermaster Board takes its final action.

### **3.3.5 RAYMOND BASIN MANAGEMENT**

#### **3.3.5.1 RAYMOND BASIN JUDGMENT**

In 1937 the City of Pasadena filed suit to adjudicate water rights of the Raymond Basin.<sup>4</sup> The State of California Division of Water Resources (DWR) was retained to prepare a Report of Referee which described the geology and hydrogeology of the Raymond Basin and identified the Safe Yield of the active Raymond Basin as 21,900 acre-feet. Parties to the Judgment were allowed to exceed its water right by no more than 10 percent. (Any exceedance is deducted from the following year's water right.) The water rights are fixed each year and do not vary.

The City of Pasadena requested the safe yield of Raymond Basin be re-determined during 1950. Subsequently, the Court issued a Modification of Judgment on April 29, 1955 increasing the Safe Yield of Raymond Basin to 30,622 acre-feet. This is referred to as the "Decreed Right of 1955" and water rights for all parties are shown in Appendix I.

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<sup>4</sup> City of Pasadena vs. city of Alhambra, et al, Los Angeles County Case No. Pasadena C-1323, Judgment entered December 23, 1944, modified April 29, 1955.

The Raymond Basin Judgment allows parties to carryover up to 10 percent of their "Decreed Right" but can not produce water in excess of the "Decreed Right" by more than 10 percent in any year. The Raymond Basin Judgment is administered by the Raymond Basin Management Board.

### **3.4 DESCRIPTION OF GROUNDWATER BASIN**

#### **3.4.1 MAIN BASIN**

The San Gabriel Valley is located in southeastern Los Angeles County and is bounded on the north by the San Gabriel Mountains; on the west by the San Rafael and Merced Hills, on the south by the Puente Hills and the San Jose Hills, and on the east by a low divide between the San Gabriel River system and the Upper Santa Ana River system.

The San Gabriel River and its distributary, the Rio Hondo, drain an area of about 490 square miles upstream of Whittier Narrows. Whittier Narrows is a low gap between the Merced and Puente Hills, just northwest of the City of Whittier, through which the San Gabriel River and the Rio Hondo flow to the coastal plain of Los Angeles County. Whittier Narrows is a natural topographic divide and a subsurface restriction to the movement of groundwater between the Main San Gabriel Basin and the Coastal Plain. The 490 approximate square miles of drainage area upstream of Whittier Narrows is about 167 square miles of valley lands and about 323 square miles of mountains and foothills.

The Main Basin includes essentially the entire valley floor of San Gabriel Valley with the exception of the Raymond Basin and Puente Basin. The boundaries of the Main Basin are the Raymond Basin on the northwest, the base of the San Gabriel Mountains on the north, the groundwater divide between San Dimas and La Verne and the lower boundary of the Puente Basin on the east, and the common boundaries between USGVMWD and Central Basin through Whittier Narrows on the southwest. The common water supply of the Main Basin does not include the Raymond Basin, the area northerly of Raymond Hill Fault, which was adjudicated in the Pasadena v.

Alhambra case (Superior Court of the County of Los Angeles, 1944). The Puente Basin, although tributary to the Main Basin, is not included in the Main Basin administered by the Main San Gabriel Basin Watermaster.

The Main Basin (administered by the Main San Gabriel Basin Watermaster) is a large groundwater basin replenished by stream runoff from the adjacent mountains and hills, by rainfall directly on the surface of the valley floor, subsurface inflow from Raymond Basin and Puente Basin, and by return flow from water applied for overlying uses. Additionally, the Main Basin is replenished with imported water. The Main Basin serves as a natural storage reservoir, transmission system and filtering medium for wells constructed therein.

There are three municipal water districts overlying and partially overlying the Main Basin. The three districts are USGVMWD, SGVMWD and TVMWD. The boundaries of these water districts are shown on Plate 3.

Urbanization of the San Gabriel Valley began in the early part of the twentieth century, but until the 1940's, agricultural land use occupied more area than residential and commercial land use. After World War II agricultural areas reduced rapidly and are now less than two thousand acres. The agricultural areas tend to be located in the easterly portion of the Main Basin and along power transmission rights of way adjacent to the San Gabriel River. Agricultural plots are discontinuous and relatively small. There are several major industrial areas adjacent to the San Gabriel River and within other portions of the valley. The greatest area of land use in the valley is for residential and commercial purposes.

#### **3.4.1.1 GEOLOGY**

The Main Basin consists of a roughly bowl-shaped depression of bedrock, filled over millions of years with alluvial deposits. This bowl-shaped depression is relatively deep; the elevation of the base of the groundwater reservoir declines from about 800

feet above mean sea level (MSL) in the vicinity of San Dimas at the northeast corner of the Main Basin to about 2,200 feet below MSL in the vicinity of South El Monte. (California Department of Water Resources, 1966, Plate II.)

Most of the alluvium deposited within this depression is debris from the San Gabriel Mountains, washed and blown down from the side of the mountains over time. This process has also resulted in the materials of the Main Basin varying in size from relatively coarse gravel nearer the mountains to fine and medium-grained sand containing silt and clay as the distance from the mountains increases. The principal water-bearing formations of the Main Basin are unconsolidated and semi-consolidated sediments, which vary in size from coarse gravel to fine-grained sands. The interstices between these alluvial particles throughout the Main Basin fill with water and transmit water readily to wells. The thickness of the water-bearing materials in the Main Basin ranges from 200 to 300 feet in the northeastern portion of the Main Basin near the mountains (Los Angeles County Department of Public Works, 1934, page 141.) to nearly 4,000 feet in the South El Monte area. (California Department of Water Resources, 1966, page 31.)

The soils overlying the Main Basin average about six feet in depth. Soil depths are generally greater at the perimeter of the valley and decrease toward the center along the San Gabriel River. These soils are residual, formed in place through chemical, mechanical and plant weathering processes. The infiltration rates of these soils are greater along the natural channels and their adjacent flood plains. Lower infiltration rates are found in the perimeter areas of the valley. Since the valley is mostly urbanized, a significant portion of the area has been paved and many miles of stream channel have been lined for flood control purposes, thus decreasing infiltration of water through streambeds. Detailed basin geology is discussed in the report entitled "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geo-hydrology" (California Department of Water Resources, 1966).

The City of Alhambra produces its groundwater from the westerly portion of the Main Basin, which is referred to as the "Alhambra Pumping Hole." The location of the APH is shown on Plate 4. It is an area with limited replenishment due to the tightness of the groundwater formations and limited facilities for direct recharge to the area. Replenishment of the Main Basin in the area from the Rio Hondo east has little effect on the westerly portion of the Main Basin due to the limited transmissibility through the tighter formations west of the Rio Hondo.

As shown on Figure 2 water levels near the City of Alhambra Garfield Well declined from a high elevation of about 265 feet in 1944 to a low elevation of about 150 feet in 2004. The above-average rainfall in the 1970s and 1980s caused the elevation to recover to about 180 feet in 1988 before falling to about 150 feet in recent years. In contrast to that, the water level at the Baldwin Park Key Well was at an elevation of about 310 feet in 1944 and declined to about 195 feet at its historic low elevation in 2004. However, the water level at the Key Well has had significant recovery as a result of rainfall, whereas the APH area has not.

The western portion of the Main Basin, from the Rio Hondo to the Raymond Fault and Repetto Hills, is basically underlain by older alluvium consisting of pale to dark-reddish brown, deeply weathered gravel, sand, silt and clay. A review of the well logs in the area indicates a greater amount of clayey deposits than the recent alluvium underlying the Rio Hondo and San Gabriel River area.

The older alluvium is characterized by low infiltration rates and low transmissibility values. Infiltration rates in the older alluvium are 0.1 to 1.0 inch per hour compared to 0.6 to 2.0 and more inches per hour for the recent alluvium. A vector representation of transmissibility values from the east toward the western portion of the Main Basin abruptly decreases in the vicinity of Eaton Wash to about one-sixth of the value which exists two miles to the east of Eaton Wash.

Groundwater elevation contours, which are generally parallel to Eaton Wash, coincide with the change in materials from recent to older alluvium. This results in a steep decline in water levels as the westerly movement of groundwater encounters the tighter older deposits, as shown on Plate 5.

In addition to the disadvantages of the characteristics of the water bearing materials, this area may be somewhat affected by an extension of the Workman Fault. That fault extends from the Puente Hills, easterly of Whittier Narrows Dam, in a northwesterly direction to the southerly portion of the City of Rosemead. This inferred fault extension appears to affect the movement of groundwater westerly toward the City of Monterey Park.

A reduction in pumping and/or increase in spreading of imported water in the central portion of the Main Basin does not offer a long-term solution to the problem in the Alhambra area. This is due to a combination of factors, primary of which are the geologic and hydrologic characteristics of the Main Basin.

The possibility of spreading imported water in the westerly portion of the Main Basin does not appear to be practicable. The surface materials are of low infiltration rates and the subsurface materials to a large extent contain layers of clay deposits which would prevent the sustained percolation of large quantities of water. Furthermore, suitable sites for water spreading operations are almost non-existent.

As noted in Section 3.1, the APH is being managed through implementation of the CWEA. Since its inception in 1975, the CWEA has mitigated the localized condition that exists in the APH based on relatively consistent water levels, shown on Figure 2.

#### **3.4.1.2 HYDROLOGY**

The total fresh water storage capacity of the Main Basin is estimated to be about 9.5 million acre-feet. Of that, about 1,100,000 acre-feet have been used historically in Main Basin operations. The change in groundwater elevation at the Key Well is

representative of changes in groundwater in the Main Basin. One foot of elevation change at the Key Well is roughly the equivalent of about 8,000 acre-feet of water storage. The location of the Key Well is shown on Plate 2 and hydrograph of the Key Well is shown on Figure 1. The historic high groundwater elevation was recorded at over 329.1 feet in April 1916, at which time Main Basin storage was estimated to be about 8,700,000 acre-feet. The historic low was recorded in December 2004 at 195.5 feet, at which time Main Basin storage was estimated to be about 7,600,000 acre-feet. The Key Well hydrograph shown on Figure 1 illustrates the cyclic nature of basin recharge and depletion. The hydrograph also illustrates the dramatic recharge capability of the Main Basin during wet periods.

Generally, water movement in the Main Basin is from the San Gabriel Mountains on the north to Whittier Narrows to the southwest, as shown on Plate 5. Groundwater movement in the northern and northeastern regions of the Main Basin is affected by faulting. For example, the Raymond Fault located in the northwesterly portion of the Main Basin separates the Raymond Basin from the Main Basin.

The Main Basin is an unconfined aquifer. Although clay deposits appear mixed with the soils in several locations in the Main Basin and there are various clay lenses throughout the Main Basin, they do not coalesce to form a single impermeable barrier for the movement of subsurface water. The Main Basin therefore operates as a single, unconfined aquifer. As previously mentioned, a thorough discussion of basin hydrogeology is contained in the report "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geo-hydrology" (California Department of Water Resources, 1966).

Within the Main Basin there are a number of identified sub-basins. These include the Upper San Gabriel Canyon Basin, Lower San Gabriel Canyon Basin, Glendora Basin, Foothill Basin, Way Hill Basin and San Dimas Basin. In addition, the Puente Basin is tributary to the Main Basin from the southeast, between the San Jose and Puente Hills. Plate 2 shows the location of the sub-basins within the Main Basin.

#### 3.4.1.3 GROUNDWATER RECHARGE

The major sources of recharge to the Main Basin are direct penetration of rainfall on the valley floor, percolation of runoff from the mountains, percolation of imported water and return flow from applied water. Rainfall occurs predominantly in the winter months and is more intense at higher elevations and closer to the San Gabriel Mountains.

The magnitude of annual recharge from direct penetration of local rainfall and return flow from applied water is not easily quantifiable. Percolation of runoff from the mountains and valley floor along with percolation of imported water has only been estimated. The DPW maintains records on the amount of local and imported water conserved in water spreading facilities and stream channels.

The San Gabriel River bisects the Main Basin. The San Gabriel River originates at the confluence of its west and east forks in the San Gabriel Mountains. It flows through the San Gabriel Canyon and enters the Main Basin at the mouth of the canyon north of the City of Azusa. The San Gabriel River flows southwesterly across the valley to Whittier Narrows, a distance of about 15 miles. It exits San Gabriel Valley at Whittier Narrows, and transverses the Coastal Plain in a southerly direction to reach the Pacific Ocean at Alamitos Bay near the City of Long Beach.

The San Gabriel River is joined and fed by tributary creeks and washes. In the Main Basin these include: Big Dalton Wash, which originates in the San Gabriel Mountains; Walnut Creek, which originates at the northeast end of the San Jose Hills; and San Jose Creek, which originates in the San Gabriel Mountains, but which travels around the southerly side of the San Jose Hills through the Puente Narrows before joining the San Gabriel River just above Whittier Narrows.

The channel of the San Gabriel River bifurcates in the upper middle portion of the Main Basin, forming a channel to the west of and parallel to the San Gabriel River, known as the Rio Hondo. Tributaries draining the westerly portion of the Main Basin,



including Sawpit Wash, Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash, all of which originate in the San Gabriel Mountains or the foothills, feed the Rio Hondo. The Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash all cross the Raymond Basin area before entering the Main Basin. The channel of the Rio Hondo passes through Whittier Narrows westerly of the San Gabriel River, and then flows southwesterly to join the Los Angeles River on the Coastal Plain.

To protect residents of the San Gabriel Valley from flooding that can result during periods of intensive rainfall, the DPW and the U.S. Army Corps of Engineers (Corps of Engineers), have constructed an extensive system of dams, debris basins, reservoirs and flood control channels, which are shown on Plate 2. The dams and reservoirs also operate as water conservation facilities. The dams and reservoirs that control the flow of the San Gabriel River and the Rio Hondo include: Cogswell Reservoir on the west fork of the San Gabriel River, San Gabriel Reservoir at the confluence of the west and east forks of the San Gabriel River, Morris Reservoir near the mouth of the San Gabriel Canyon, Santa Fe Reservoir in the northerly portion of the Main Basin and Whittier Narrows Reservoir at the southwestern end of San Gabriel Valley.

Many of the stream channels tributary to the San Gabriel River have been improved with concrete banks (walls) and concrete-lined bottoms. These stream channel improvements have significantly reduced the area of previous stream channels and reduce Main Basin recharge. A number of off-stream groundwater replenishment facilities have been established along these stream channels to offset such reductions in recharge. The locations of these water spreading facilities are shown on Plate 2. Some of these facilities are accessible to imported water supplies, while some facilities receive only local runoff.

The paths of the surface streams are mirrored in the soils and in the direction of groundwater movement in the Main Basin. The tributary creeks and washes, carrying smaller amounts of water, generally flow toward the center of the San Gabriel Valley, while the direction of flow of the major streams, the San Gabriel River and the Rio

Hondo, is from the mountains in the north to Whittier Narrows in the southwest. In similar fashion, the primary direction of groundwater movement in the Main Basin is from the north to the southwest, with contributing movement generally from the east and west toward the center of the Main Basin as shown on Plate 5. The greatest infiltration and transmissivity rates of soils in the Main Basin are from north to south, with the maximum rates found in the center of the valley along the stream channels. Generally, the Main Basin directs groundwater to the southwest through Whittier Narrows.

### **3.4.2 RAYMOND BASIN**

The Raymond Basin is located in Los Angeles County about 10 miles northeasterly of downtown Los Angeles. Raymond Basin is a wedge in the northwesterly portion of the San Gabriel Valley and is bounded on the north by the San Gabriel Mountains, on the west by the San Rafael Hills and is separated from the Main San Gabriel Basin on the southeast by the Raymond Fault. The Raymond Basin is divided into an eastern unit, which is the Santa Anita sub-area, and the Western unit which is the Pasadena sub-area and the Monk Hill Basin. The location of the Raymond Basin and the subareas are shown on 6. The surface area of Raymond Basin is about 40.9 square miles.

The principal streams in the Raymond Basin are the Arroyo Seco, Eaton Wash and Santa Anita Wash. The Arroyo Seco drains to the Los Angeles River, while Eaton Wash and Santa Anita Wash drain to the Rio Hondo, a distributary of the San Gabriel River.

#### **3.4.2.1 GEOLOGY**

The geology of the Raymond Basin is described in details in the "Report of Referee" prepared in 1943 by the State of California Division of Water Resources and is summarized below.

The Raymond Basin is roughly triangular in shape. Its northern boundary, about twelve miles in length, is formed by a portion of the southerly front of the San Gabriel

Mountains. The western boundary of the Raymond Basin is about eight miles long and is also composed chiefly of the same Basement Complex rocks which form the mountains and which are continuous at depth, together with a small area of marine Tertiary sediment at the southern end. Raymond Fault, the southern boundary of the triangle, crosses the San Gabriel Valley floor for a distance of about nine miles, connecting a granitic spur from the mountains at the eastern end of the Raymond Basin with tertiary sediments outcropping in its southwestern corner.

The Raymond Fault separates Raymond Basin from the Main Basin. The fault zone is not impervious and groundwater can flow across this boundary into the Main Basin. The source of natural groundwater supply to the Raymond Basin is direct rainfall, percolation from surface runoff from the northern and western sides, and presumably some underground percolation of water from the mountain mass to the alluvium.

#### **3.4.2.2 HYDROGEOLOGY**

DWR describes the hydrogeology of the Raymond Basin in its Bulletin 118. According to the report, the water-bearing materials of the Raymond Basin are dominated by unconsolidated quaternary alluvial gravel, sand, and silt deposited by streams flowing out of the San Gabriel Mountains. Younger alluvium typically follows active streambeds and reaches a maximum thickness of about 150 feet. Older alluvium generally thickens southward from the mountain front, reaching a maximum of about 1,140 feet near Pasadena, then thins to about 200 feet near the Raymond Fault. However, confined groundwater conditions have existed locally in the Raymond Basin, particularly along the Raymond Fault near Raymond Hill where layers of finer-grained sediments become more abundant.

The Raymond Fault trends east-northeast and acts as a groundwater barrier along the southern boundary of the Raymond Basin. This fault acts as a complete barrier along its western end and becomes a less effective barrier eastward. East of Santa Anita Wash, this fault ceases to be an effective barrier and the flow of

groundwater southward into the Main Basin becomes essentially unrestricted. A north-trending divide paralleling the Eaton Wash separates both surface and subsurface water flow in the eastern portion of the Raymond Basin. The water level is higher on the eastern side of this divide, ranging from 300 feet higher in the north to about 50 feet higher in the south. Monk Hill, an emergent mound of consolidated bedrock within the Raymond Basin, causes groundwater to flow around it, but does not appreciably change the regional flow pattern. Groundwater contour maps for the Raymond Basin (prepared for the Raymond Basin Annual Report) are included in Appendix J.

Natural recharge to the Raymond Basin is mainly from direct percolation of precipitation and percolation of ephemeral stream flow from the San Gabriel Mountains in the north. The principal streams bringing surface inflow are the Arroyo Seco, Eaton Creek and Santa Anita Creek. Some stream runoff is diverted into spreading grounds and some is impounded behind small dams allowing the water to infiltrate and contribute to groundwater recharge of the Raymond Basin. An unknown amount of underflow enters the Raymond Basin from the San Gabriel Mountains through fracture systems.

Water levels in the Raymond Basin have varied through time but are managed to stay within limits of a long-time mean elevation. Hydrographs show the range of fluctuation in water level over the last 20 years to be about 50 to 60 feet in the northwest, 80 feet in the central, 30 feet in the south (where the City of Alhambra's Well 2 is located), and 140 feet in the northeast portions of the Raymond Basin. In addition, hydrographs from the Raymond Basin Annual Report of 2003-2004 show that water levels in the Monk Hill Basin and Pasadena Subarea have been relatively constant, although water levels in the Santa Anita Area fluctuate more substantially (Appendix J).

No estimates of available groundwater storage have been made recently in the Raymond Basin. DWR (1971) study estimated the available stored water to be 1,000,000 acre-feet in 1970, leaving about 450,000 acre-feet of storage space available. Because the Raymond Basin is managed and water levels have been

generally constant over the past 35 years, the present amount of stored water and storage space available should be similar to the amount available in 1970.

### **3.5 PAST LOCATION, AMOUNT AND SUFFICIENCY GROUNDWATER**

The City of Alhambra can produce groundwater from the Main Basin and Raymond Basin and can purchase imported water from MWD. The location of the City's wells are shown on Plate 1. The City's annual water supply from 1974-75 through 2004-05 are shown on Table 2.

#### **3.5.1 MAIN BASIN**

The City of Alhambra produces groundwater through its eight active wells in the Main Basin. As noted in Section 3.3, the Main Basin is managed by the Main San Gabriel Basin Watermaster. Section 42 of the Main Basin Judgment (Basin Operating Criteria) states in part "...Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds Elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200)." Figure 1 shows the historic fluctuation of the Key Well since the Main Basin was adjudicated in 1973 and demonstrates that the Main Basin was generally operated between elevation 250 feet and 200 feet above msl. Furthermore, at elevation 200 feet msl at the Key Well, the Main Basin has about 7,600,000 acre-feet of available storage. During the period of management under the Main Basin Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991 and 1998 to 2004. In each drought cycle the Main Basin was managed to maintain its water levels.

#### **3.5.2 RAYMOND BASIN**

The City of Alhambra also produces groundwater from the Pasadena Subarea of the Raymond Basin. The City of Alhambra has one well, Well No. 2, located in the Raymond Basin. The City of Alhambra historic groundwater supply is shown on Table 2.

According to the Raymond Basin Judgment, the City of Alhambra can produce up to 1,031 acre-feet each year from the Raymond Basin.

As discussed in Section 3.3, the Raymond Basin has been adjudicated and is managed. As shown on the hydrographs in Appendix J, water levels in Pasadena Subarea have been relatively constant since 1970. Although the City of Alhambra's historic production from Raymond Basin has decreased in recent years due to water quality, the City of Alhambra has plans to develop a blending plan for its Well 2 to restore use of its water rights in Raymond Basin.

### 3.6 PROJECTED LOCATION, AMOUNT AND SUFFICIENCY OF GROUNDWATER

The City of Alhambra expects the population within its service area to increase at a rate of about 1.1 percent per year between 2005 and 2025, as discussed in Chapter 2. As shown on Table 2, the maximum groundwater production for the last five years was 10,945 acre-feet. The projected amount of groundwater to be pumped over the next 20 years is not expected to exceed 12,500 acre-feet per year, based on the City's projected demands. As noted earlier, the Raymond Basin and Main Basin are managed to maintain adequate future supplies.

### 3.7 RELIABILITY OF WATER SUPPLY TO CLIMATE [Section 10631 (c) (1)-(3)]

#### *Section 10631*

- c) *Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*

- 1) An average water year.*
- 2) A single dry water year.*
- 3) Multiple dry water years.*

*For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

The reliability of the water supply for the City of Alhambra is primarily dependent upon the management of Main Basin and Raymond Basin. The management of both basins is based on their adjudication, which is described in Section 3.3. The City of Alhambra currently only pumps groundwater from Main Basin and can rely on the water

supply sources of the Main Basin in an average water year, a single-dry water year and during a multiple-dry water year.

As previously noted, the Main Basin was adjudicated in 1973 and is managed by Main San Gabriel Basin Watermaster. Information regarding the reliability of the groundwater supply from Main Basin is based on the 46-year rainfall data for the San Gabriel Valley. Table 4 summarizes the rainfall within the San Gabriel Valley from 1958-59 through 2003-04. According to the rainfall data the Main Basin experienced a single dry year in 1986-87 in which the total amount of rainfall was about 9.1 in. and a multiple dry year sequence from 1988-89 through 1990-91 in which the total amount of rainfall was about 11.2 in., 12.4 in, and 15.1 in. respectively. Figure 1 also shows the rainfall levels in respect of the elevation of the Key Well. Table 5 presents the historic water demand for an average year, single dry year and multiple dry years compared to the City's historic water supply. As shown on Table 5, a dry year or multiple dry years did not compromise the City of Alhambra's ability to provide a reliable supply of water to its customers.

### 3.8 EXCHANGES AND TRANSFERS [Section 10631 (d)]

#### *Section 10631*

*d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

#### 3.8.1 LONG-TERM

As discussed earlier the City of Alhambra is involved with a water exchange program called the "Cooperative Water Exchange Agreement". The CWEA was negotiated to solve a local problem near the City of Alhambra. There are seven producers that extract water from the APH and this has resulted in declining water level elevations. To mitigate the condition, it was agreed the City would receive direct delivery of water from MWD and in exchange would reduce its extractions from the pumping hole by an equivalent quantity. Currently, the Main San Gabriel Basin

Watermaster levies an In-lieu Assessment to provide reimbursement to the City of Alhambra for increased incremental costs, which are incurred by the City.

In addition, the City is a party to the Main Basin Judgment and has adjudicated water rights. The Main Basin Judgment does not restrict the quantity of groundwater that can be produced, but provides for a Replacement Water assessment for production in excess of water rights. The Main Basin Judgment also allows parties to enter into temporary transfers (leases) of water rights to acquire additional water rights on an annual basis to reduce the quantity of production that may be subject to a Replacement Water assessment.

The City of Alhambra also has entered into a Cyclic Storage agreement with the Main San Gabriel Basin Watermaster to store imported water in the Main Basin for a period of up to five years to be used to offset a future Replacement Water requirement. The City relies on SGVMWD to deliver imported water to the Main Basin. The City of Alhambra is allowed to store a maximum of 10,000 acre-feet at any given time in its Cyclic Storage account. As of June 30, 2005 the City of Alhambra had 540.94 acre-feet in its Cyclic Storage account. Because water is often in Cyclic Storage for many years before being required as Replacement Water, the Cyclic Storage program, although technically a conjunctive use operation, may be considered an exchange or transfer program in that it takes advantage of surplus water, when available, and stores it in the Main Basin for future use.

### **3.8.2 SHORT-TERM**

The City of Alhambra has three interconnections in case of an emergency. If the City of Alhambra's water system becomes interrupted it can receive emergency assistance from California-American Water Company and San Gabriel Valley Water



District. The following is a list of emergency interconnections that deliver water to the City of Alhambra.

- 6-inch connection from California-American Water Company – Capacity of 1,200 gallons per minute (gpm) which feeds the southern zone
- 6-inch connection from California-American Water Company – Capacity of 800 gpm which feeds directly to Keweenaw Reservoir
- 6-inch connection dual connection with San Gabriel County Water District – Capacity of 1,200 gpm which feeds the southern zone

## Chapter 4

### PAST, CURRENT AND PROJECTED WATER USE

Section 10631.

- (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:
- (A) Single-family residential
  - (B) Multifamily
  - (C) Commercial
  - (D) Industrial
  - (E) Institutional
  - (F) Landscape
  - (G) Sales to other agencies
  - (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof
  - (I) Agricultural
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).

#### 4.1 PAST AND CURRENT WATER USE [Section 10631(e) (1)]

The historic domestic water use during *non-drought* years was approximately 130 gallons per person per day use (gpcd). Currently, the gpcd is 126, based on the 2004 metered sales and current population for the City of Alhambra. Historical and current water consumption by customer type is shown on Table 6. The City of Alhambra currently serves approximately 16,452 service connections. The City maintains records of its water usage and service connections by customer group. The City's records are broken down by single family residential, multi-family residential, commercial/industrial/institutional, landscape irrigation, and other. In calendar year 2004, as shown on Table 6, consumption by customer class recorded that single family and multi-family use was approximately 9,726 AF; Commercial, Institutional and Industrial use was approximately 2,274 AF; Landscape and Irrigation use was approximately 589 AF and Other use was approximately 139 AF. The total annual water consumption for 2004 was about 12,729 AF, as shown on Table 6.

#### **4.2 PROJECTED WATER USE [Section 10631(e) (2)]**

The City of Alhambra's Development Services Department considers the City's municipal service area to be built-out. Over the past 20 years, the City of Alhambra has experienced substantial growth due to redevelopment and the conversion of single dwelling units into multi-family dwelling units (condominiums). With less growth anticipated in the future, the service area is not expected to experience a significant increase in the future water demands on the City of Alhambra's system. The City has plans to redevelop the West Main Street Corridor. The City's West Main Street Corridor project is a \$400 to \$500 million dollar project that is anticipated to create over 700 new dwelling units along with new retail and commercial units. The estimated demands for the new development are about 500 acre-feet.

The projected water use for the City of Alhambra should remain fairly consistent as the City is essentially built-out with little room for extensive industrial, commercial and/or residential development. Large scale development would be confined to replacement of existing structures. Accordingly, water use should not be measurably impacted. The projected water use by customer group is expected to follow the same trends as the increase in population. Projected water use is shown on Table 8 and besides these water uses, additional current or future water uses are not expected. The projected number of connections by customer type is shown on Table 7.

## CHAPTER 5

### CURRENT CONSERVATION MEASURES

*Section 10631.*

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:*

- A) Water survey programs for single-family residential and multifamily residential customers*
- B) Residential plumbing retrofit.*
- C) System water audits, leak detection, and repair*
- D) Metering with commodity rates for all new connections and retrofit of existing connections.*
- E) Large landscape conservation programs and incentives.*
- F) High-efficiency washing machine rebate programs*
- G) Public information programs*
- H) School education programs*
- I) Conservation programs for commercial, industrial, and institutional accounts.*
- J) Wholesale agency programs.*
- K) Conservation pricing*
- L) Water conservation coordinator.*
- M) Water waste prohibition*
- N) Residential ultra-low-flush toilet replacement programs.*

*(2) A schedule of implementation for all water demand management measures proposed or described in the plan.*

*(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.*

*(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.*

*(g) An elevation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation.*

*In the course of the evaluation, first consideration shall be given to water demand management measures, or a combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:*

*(1) Take into account economic and non-economic factors, including environmental, social, health, customer impact, and technological factors.*

*(2) Include a cost-benefit analysis, identifying total benefits and total costs.*

*(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.*

*(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.*

*(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water uses as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of water supply*

*available to the urban water supplier in average, single dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

## **5.1 WATER DEMAND MANAGEMENT MEASURES [Section 10631(f) (1)]**

The City of Alhambra is a retail water company that provides water to its customers through groundwater pumping and imported water as part as the CWEA. The City of Alhambra, as a sub-agency of SGVMWD, receives imported water for groundwater replenishment. The City of Alhambra is committed to water conservation and implements water conservation methods. The City employs water conservation measures to discourage water waste and water over-use.

The City of Alhambra is not a signatory to the Memorandum of Understanding regarding Urban Water Conservation in California (MOU) and is therefore not a member of the California Urban Water Conservation Council (CUWCC). The following discussion describes the Demand Management Measures the City implements and provides information on the Demand Management Measures not economically viable for the City to implement. Alternative measures will be evaluated if it is determined further water conservation measures need to be implemented.

### **5.1.1 WATER SURVEY PROGRAMS FOR SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL CUSTOMERS [Section 10631(f)(1)(A), (2), (3), (4)]**

The City of Alhambra has a computerized billing system that automatically audits customer's water usage. The City uses this system to monitor water consumption data and if there are unusual variations in consumption the City is alerted. The City's billing system flags unusual consumption which alerts the City about leaks in the system or inoperable meters. If a problem exists within a customer's service connection, a customer can make a request to have a service representative inspect the customer's system. If the City's service representative concludes the problem exists within the customer's service connection, they will recommend the customer repair the connection. If the City's service representative concludes the problem exists within the City's service connection, the City will make the necessary repairs. This program

effectively helps eliminate leaks within customer's service connection and informs the customer of their water usage. However, it is difficult to calculate the amount of water savings this program provides for the City of Alhambra.

#### **5.1.2 RESIDENTIAL PLUMBING RETROFIT [Section 10631(f)(1)(B), (2), (3), (4)]**

The City of Alhambra participates in a residential plumbing retrofit program by distributing water efficient faucets, shower heads, filters and ultra-low-flush toilets. The City distributes the various water efficient residential plumbing retrofits within its service area at a variety of community events. This program effectively contributes to the conservation of water by providing the City's customers with alternate plumbing retrofit that is water efficient. The City does not have a method to quantify the water savings attributed to this program.

#### **5.1.3 SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR [Section 10631(f)(1)(C), (2), (3), (4)]**

The City of Alhambra repairs leaks within its distribution system on an as-needed basis. The City closely monitors its water production and consumption use tabulating the amount of "unaccounted for water". The City's current estimated "unaccounted for water" is approximately 5.1 percent. If the City notices an increase in "unaccounted for water" that is not attributed to normal water loss, the City will investigate the cause and repair a leak if necessary. Normal water loss can result from the installation of new water mains, difference in accuracy of meters, water facilities or water connections, street cleaning and Fire Department training. If water loss is not a result of normal water loss activities, the City can assume there is a faulty meter or a leak in the distribution system, identify the cause and make the repairs.

The City computerized billing system also helps flag variations in water use which can be a result of a leak or faulty meter. This form of water audit is discussed further in Section 5.1.1.

This program is effective in maintaining distribution systems that deliver water effectively and efficiently with the least amount of water loss. The amount of water conserved through the City of Alhambra's program can be estimated by evaluating the average amount of "unaccounted for water". The amount of "unaccounted for water" should not change significantly from year to year.

**5.1.4 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS [Section 10631(f)(1)(D), (2), (3), (4)]**

The City of Alhambra has a complete metered system for all customer sectors. The City has separate meters for each unit of multi-family residential, single-family residential, commercial and all institutional/governmental facilities. Within the City if there is new development or redevelopment, each unit is individually metered. Within the City's metered distribution system commodity rates exist for all new and existing connections. Appendix K provides the City's rate schedule for 2004-05.

A billing unit for the City of Alhambra is equivalent to one hundred cubic feet which is commonly referred to as HCF or CCF. The City has basic system operation fees that vary with the size of the connection. The City also has a water usage charge that increases with each increase in water use. Those customers that use between 0 and 12 CCF pay less per billing unit than a customer that uses between 13 and 20 CCF or more. Additional information on the City's rate information is located in Appendix K. This program effectively promotes water conservation by providing financial incentives to its customers through the City's rate schedule. The amount of water conserved could be measured by comparing current customer use data to historic use records.

**5.1.5 LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES [Section 10631(f)(1)(E ), (2), (3), (4)]**

The Alhambra Golf Course is located within the City of Alhambra and utilizes non-potable water for irrigation. The City of Alhambra delivers such water to the Golf Course within its service area to minimize the need for potable water supplies which can be used elsewhere within the City. In addition to the use of non-potable water, the City's Utilities Department continually works with the Community Services Department and the Alhambra Unified School District to improve water use efficiency at public

areas. There is no method to calculate the amount of water conserved by this program. However, the water delivered from non-potable wells is the water conserved from the City's potable water system.

**5.1.6 HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM [Section 10631(f)(1)(F), (2), (3), (4)]**

The City of Alhambra does not currently implement a high-efficiency washing machine rebate program because it is not economically viable. Assuming that a high-efficiency washing machine could save about 5,100 gallons per year it would take 64 high-efficient washing machines to save 1 AFY. The rebate for a high-efficiency washing machine is assumed to be about \$50 plus \$25 for administrative costs. Therefore, it would cost about \$4,790  $((\$50 + \$25) \times 64)$  to save 1 AFY of water. Currently the City of Alhambra pays about \$140 in assessment fees and about \$100 for pumping costs for a total of \$240 compared to paying \$4,790 in incentives.

**5.1.7 PUBLIC INFORMATION PROGRAMS [Section 10631(f)(1)(G), (2), (3), (4)]**

The City of Alhambra participates in public information programs that educate the public on current water issues, water awareness and water conservation. The City of Alhambra conducts multiple public outreach events within its service area during Water Awareness Month and year round where its customers can learn about water resources and water conservation. In addition, the City has also participated in the Chinese Lunar New Year and a July 4<sup>th</sup> Celebration where the City has an informative booth displayed.

As a member agency of SGVMWD, the City of Alhambra also participates in SGVMWD's public information program, which consists of newsletters, video presentations, maps and an information booth at the Los Angeles County Fair. More information about SGVMWD's public information programs is located in its 2005 UWMP, which is incorporated by reference. These programs effectively inform the City's customer about water wise use practices and conservation techniques. The amount of water conserved from this program cannot be determined. However, this program is in the best interest of the public and provides information on water awareness and conservation measures.



In addition, the City is currently developing additional public outreach programs including media relations, advertising, promotions, marketing, material distribution, direct mail and communication. The following provides examples of the City's proposed public outreach programs.

- Press releases, articles for high school newspaper, and Chamber newsletter
- Plant giveaway to introduce xeriscape
- Bottled Alhambra water
- Garden tours at the City's two xeriscape gardens
- Messages to insert into customer's water bills
- Best Management Practices brochure
- Brochures in Multiple Languages

#### **5.1.8 SCHOOL EDUCATION PROGRAMS [Section 10631 (f)(1)(H),(2), (3), (4)]**

The City of Alhambra's direct school education program includes a water awareness poster contest for students in grades K through 8<sup>th</sup>. In addition, the City is currently exploring alternative school education programs within its proposed public outreach programs, which are discussed in Section 5.1.7.

As a member of SGVMWD, the City of Alhambra can also participate in SGVMWD's school education programs. SGVMWD is currently in the process of expanding its school education programs and details regarding new programs can be found in SGVMWD's 2005 UWMP, which is incorporated by reference. The City's school education programs are effective at informing students about water conservation. The amount of water conserved from this program cannot be measured; however, the students within the City's service area benefit from the educational tools and are informed of water-related issues.

#### **5.1.9 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL ACCOUNTS [Section 10631(f)(1)(I), (2), (3), (4)]**

Similar to residential audits and leak detection the City of Alhambra also provides audits for commercial, industrial and institutional accounts. The City is 100 percent metered; therefore commercial, industrial and institutional accounts run off the same metered system and are monitored through the City's computerized billing system. If there is a leak or problem in the City's distribution system the computerized billing system will alert the City by flagging all variations in water use. The City will then notify the customer and based on their request, the City will go out to the source and checks for leaks. This program is effective at detected leaks within the City's system and helps eliminate water waste due to a faulty distribution system. The amount of water saved through this program is difficult to calculate.

#### **5.1.10 WHOLESALE AGENCY PROGRAMS [Section 10631(f)(1)(J), (2), (3), (4)]**

The City of Alhambra is a retail water supplier, therefore cannot directly implement wholesale agency programs. However, as a member of SGVMWD, the City of Alhambra participates in SGVMWD's wholesale agency programs. SGVMWD's wholesale agency programs include:

- Public information programs
- School education programs
- Water waste prohibition
- Residential ultra-low-flush toilet replacement program

#### **5.1.11 CONSERVATION PRICING [Section 10631(f)(1)(K),(2), (3), (4)]**

On July 1, 1992, the City created a three-tier water rate structure to provide financial incentives for customers that conserve water. Currently, the City of Alhambra continues to implement the three-tier rate structure and bills its customers bimonthly. The current water rate consists of two components; the System Operations Charge and the Commodity Charge (which was discussed in Section 5.1.4). The System Operations Charge is included in each bill and is based on the size of the connection. As the meter size increases so does the amount charged for operation. The water

usage charge also increases with the amount of water used. If a customer uses 0 to 12 CCF their current rate for 2005 is \$1.34 per unit. If a customer uses 13 to 20 CCF their current rate for 2005 is \$1.42 per unit. If a customer uses 21 plus CCF their current rate for 2005 is \$1.46. This program is an effective way to promote water conservation because the City's customers are rewarded based on their personal practices. Those customers that conserve water will save money. Water conservation can be evaluated by reviewing historic water use records before 1992 and comparing them to water use records after 1992.

#### **5.1.12 WATER CONSERVATION COORDINATOR [Section 10631(f)(1)(L), (2), (3), (4)]**

The City of Alhambra does not have a specific position designated Water Conservation Coordinator. However, the City's Customer Service Manager is responsible for all aspects of water conservation measures. The City's Customer Service Manager coordinates public water awareness programs and participates in the distribution of water efficient plumbing retrofits. This position, as well as all employees of the City of Alhambra, is effective at informing the public on water awareness. The City of Alhambra's Customer Service Division works as a team informing the public at special events, on programs and with direct customer contact. The amount of water conserved from this conservation measure cannot be determined.

#### **5.1.13 WATER WASTE PROHIBITION [Section 10631(f)(1)(M), (2), (3), (4)]**

The City of Alhambra has various water waste prohibition and guidelines incorporated in its Urban Water Shortage Contingency Plan. These include the following:

- No customer of the City of Alhambra shall cause or allow the use of water to run off any landscape areas into adjoining streets, sidewalks, parking lots or alleys due to incorrectly directed or maintained sprinklers or excess watering
- No customer of the City of Alhambra shall use or allow the use of water for landscape watering more than every three days.

- No customer of the City of Alhambra shall use or allow the use of water for landscape watering between the hours of 10:00 a.m. and 5:00 p.m. (AMC Chapter 15.25)

In addition to these prohibitions and guidelines, the City has a "No-Waste" ordinance that is enforced. A copy of the City's Ordinance for the City's Water Shortage Plan is located in Appendix L and discussed in greater detail in Chapter 7. This program is effective in the conservation of water in that customers are ordered to conserve the amount of water used for landscaping and even limits the customer to specific days and hours water can be used for such activities. There is not a method to determine the amount of water conserved through this program.

#### **5.1.14 RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS** **[Section 10631(f)(1)(N), (2),(3), (4)]**

The City of Alhambra participates in a residential ultra-low-flush toilet replacement program in conjunction with SGVMWD. The residential ultra-low-flush toilet program consists of replacing current low-flow toilets (3.5 gallons per flush) with ultra-low-flush toilets (1.25 gallons per flush). Since 2000, the City has distributed 2,486 ultra-low-flush toilets with its service area.

In addition to the ultra-low-flush toilet replacement program, the City has adopted the State of California building codes that require the installation of ultra-low-flush toilets in all new construction.

These programs effectively conserve water by reducing the amount of water needed to operate a toilet. The low-flow toilets used 3.5 gallons of water per flush and the new ultra-low-flush toilets use only 1.25 gallons of water per flush. The ultra-low-flush toilet program conserves 2.25 gallons of water per flush.

## CHAPTER 6

### WATER SUPPLY OPPORTUNITIES

#### 6.1 WATER USE PROJECTIONS [Section 10631(k)]

- (k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

The City of Alhambra notified SGVMWD of the development of its 2005 UWMP and made a copy of its draft 2005 UWMP available to SGVMWD who in turn provided the City of Alhambra with a copy of its draft 2005 UWMP, which is incorporated as a reference in this Plan. In addition, the City of Alhambra made a copy of its draft 2005 UWMP, which included its water use projections, available to USGVMWD. The City of Alhambra receives imported water from MWD through USGVMWD.

#### 6.2 FUTURE SUPPLY OPPORTUNITIES [Section 10631(h)]

*Section 10631*

- (h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water uses as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of water supply available to the urban water supplier in average, single dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

The City of Alhambra has groundwater pumping rights in both the Main Basin and Raymond Basin. The management structures of these Basins ensure a reliable water supply for future water demand. The management of the Main Basin and

Raymond Basin are discussed in Chapter 3. In addition to relying on the management structures of the groundwater Basins, the City of Alhambra has developed future water supply projects to optimize the use of its water rights. The following sections provide a brief overview of the City's planned water supply opportunities.

#### **6.2.1 TREATMENT FACILITY**

The City of Alhambra produces water from Wells Longden 1, Longden 2, 7, 9, 11, 13, 14 and 15 in the Main Basin for a potable supply. Currently water from Well 7 is treated for VOCs, while Wells 8 and 12 are not operational due to VOCs/Nitrates in excess of drinking water standards. The City of Alhambra is in the design phase of a project to construct a treatment facility to remove VOCs and reduce Nitrate concentrations from Wells 7, 8, 11 and 12. The location of these wells is shown on Plate 1. The treatment facility will use liquid-phase granular activated carbon (LGAC) to remove VOCs and ion exchange technology to reduce Nitrate concentrations. The project will enable Wells 8 and 12, with a combined capacity of 2,500 gpm, to return to active service. Assuming the wells are operated 50 percent of the year, this capacity will provide about 2,016 acre-feet per year to meet current/future demands.

#### **6.2.2 RAYMOND BASIN SUPPLY**

The City of Alhambra is looking into the economics of developing a blending plan to optimize the use of its Raymond Basin water rights. Currently, the City's Well No. 2 located in Raymond Basin is inoperable due to a high level of Nitrates. The development of a blending plan will allow the City to optimize its water rights within the Raymond Basin instead of pumping from Main Basin only. It is anticipated a blending plan will enable the City of Alhambra to produce about 500 acre-feet per year from its Well 2. This will provide the City with operation flexibility and offset 500 acre-feet of over production from the Main Basin. The City of Alhambra will avoid a Replacement Water assessment resulting in potential cost savings and will reduce the need to deliver 500 acre-feet of supplemental imported water the State Water Project. The City has not yet developed a timeline for this project but is in the process of evaluating a blending plan as a future water supply project.

### 6.2.3 CONSTRUCTION OF NEW WELLS

The City of Alhambra, along with six other producers, pump groundwater from the APH in the westerly part of the Main Basin, which has been drawn down due to historic pumping of the area. The City is planning to construct two new wells in the Main Basin in the vicinity of the Eaton Wash, which would be located outside the impacted APH area. The City of Alhambra intends to shift production from its wells in the APH to an area outside of the geologically impacted area. In doing so, it is hoped the historic drawdown in the APH, shown on Plate 4, may be reversed. The two new wells will also increase the City of Alhambra's operational flexibility.

### 6.3 DESALINATED WATER [Section 10631(i)]

- (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

The City of Alhambra does not have opportunities to incorporate desalinated water into its supply. The City of Alhambra pumps groundwater from the Main Basin and the Raymond Basin. Groundwater produced from these Basins is low in Total Dissolved Solids (TDS) and does not require desalination. According to "Main San Gabriel Watermaster's 2002-03 Thirtieth Annual Area Agency Water Quality Monitoring Report for the Main San Gabriel Basin", the average TDS value for the City of Alhambra's active Main Basin wells is about 260 milligrams per liter (mg/l) and ranges from 220 mg/l to 320 mg/l. Therefore, the City does not have the need to desalinate water at this time.

## Chapter 7

### URBAN WATER SHORTAGE CONTINGENCY ANALYSIS

#### *Section 10632*

*The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier.*

- (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*
- (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.*
- (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*
- (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*
- (f) Penalties or charges for excessive use, where applicable.*
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*
- (h) A draft water shortage contingency resolution or ordinance.*
- (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

#### 7.1 CITY OF ALHAMBRA WATER SHORTAGE COORDINATION

Water shortage coordination for the City of Alhambra includes the establishment of a *Water Shortage Response Team*, chaired by the Director of Utilities. Other representatives will be included from the following City departments/divisions; Public Works, Police, Fire, Development Services, Code Enforcement and the City Manager's office. The team will meet and review the Water Shortage Contingency Plan. During Stage 1, 2, or 3 water shortages, the team will meet as needed. In a Stage 4 or 'disaster level' shortage, the Team will meet more often as necessary.



The Development Services Department for the City of Alhambra provides the Utilities Department with monthly reports on new permit issuance, so that accurate and current customer water demand projections can be maintained. The City Council has and will be advised of the short and long-term water supply outlook in the area. Development guidelines will require a determination that water supply impacts have been adopted.

## **7.2 STAGES OF ACTION [Section 10632(a)]**

The City of Alhambra has developed a 'four-stage' rationing plan. Alhambra's plan includes voluntary and mandatory stages. In the event of a prolonged and severe drought, the rationing programs could be implemented as shown in Table 9. The priorities for water use of available water during a rationing plan are the following:

- Health and Safety – Interior residential use and fire fighting.
- Commercial, Industrial and Governmental – Maintain jobs & economic base.
- Existing Landscaping – Especially trees and shrubs.
- New Demand – Projects without permits when shortage declared.

Water quantity calculations used to determine the interior gpcd requirements are provided below. The Stage 2 and Stage 3 health and safety allotments are 100 gpcd and 68 gpcd, respectively. The Stage 4 Health and Safety allotment is reduced to 50 gpcd. The total annual amount of water required to meet these health and safety needs was calculated by multiplying the appropriate gpcd times population.

The Health and Safety minimum allotment was set at 68 gpcd in Stage 3 because it provides sufficient water for essential interior use with no habit or plumbing fixture changes. If individuals wish to change water use habits or plumbing fixtures, 68 gpcd is sufficient to provide for limited nonessential uses. In Stage 4, the health and safety allotment might require habit changes. Based on historical customer demand the water allocated to each customer type by priority during rationing stages is shown on Table 10.

### **7.2.1 SUPPLY SHORTAGE TRIGGERING LEVELS**

The City of Alhambra has a legal responsibility to provide water for the health and safety needs of the community. Alhambra will manage water supplies prudently to minimize the social and economic impact of water shortages. This Plan is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. Rationing program triggering levels are established to ensure that these policy statements are implemented, which are shown on Table 11.

### **7.3 WORST CASE WATER SUPPLY AVAILABILITY FOR 12, 24 and 36 MONTHS**

#### **[Section 10632(b)]**

The average water supply by source and projected worst case supply by source are provided in Table 12. Available water supply based on average water year, single dry water year, and multiple dry water years are provided in Table 5. Because the projected 2006, 2007 and 2008 'worst case' shortages could have serious economic impacts on the community, the City of Alhambra, if necessary, will establish a policy to purchase additional water to limit the water shortage to no more than 50 percent.

The City of Alhambra's water source supply consists of groundwater produced from the Main and Raymond Basins, and purchased water from MWD. Although the City of Alhambra is not a MWD agency member, the City is able to purchase water from MWD through CWEA. The groundwater entitlement in the Main Basin varies based on the Operating Safe Yield set by Basin Watermaster each year. The Raymond Basin entitlement is a fixed amount and does not change.

### **7.4 EMERGENCY SUPPLIES [Section 10632(c)]**

Extended multi-week supply shortages due to natural disasters or accidents which damage both imported and local surface sources are unlikely, but could be severe until the groundwater supply buffer is established. Studies have determined that even after a severe earthquake, groundwater wells could probably be back in production within five to ten days. The City of Alhambra's storage reservoirs hold

sufficient treated water to meet the Health and Safety requirements (50 gallons per person per day use) for the City of Alhambra residents for five to six days.

The City of Alhambra has prepared an Emergency Response Plan, which is incorporated by reference. The Emergency Response Plan describes the actions the City of Alhambra will take during a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

#### **7.5 MANDATORY PROHIBITIONS ON WATER USE [Section 10632(d)]**

The City of Alhambra adopted a Water Conservation Ordinance in July 1990. Also, as part of Alhambra's compliance with the National Pollutant Discharge Elimination (NPDES) regulations, there are additional prohibitions against over-watering. The following is a list of the City's water waste prohibitions.

- No customer of the City of Alhambra shall cause or allow the use of water to run off any landscape areas into adjoining streets, sidewalks, parking lots or alleys due to incorrectly directed or maintained sprinklers or excess watering
- No customer of the City of Alhambra shall use or allow the use of water for landscape watering more than every three days.
- No customer of the City of Alhambra shall use or allow the use of water for landscape watering between the hours of 10:00 a.m. and 5:00 p.m.

*(Alhambra Municipal Code, Chapter 15.25)*

#### **7.6 CONSUMPTION LIMITS [Section 10632(e)]**

The City of Alhambra could establish, after careful consideration and review, an allocation method for each customer type based on the length and anticipated duration of any water shortage/drought condition. For example:

- |                 |   |
|-----------------|---|
| • Single Family | Hybrid of Per-capita and Percentage Reduction |
| • Multifamily   | Hybrid of Per-capita and Percentage Reduction |
| • Commercial    | Percentage of Reduction                       |

- |                |                         |
|----------------|-------------------------|
| • Industrial   | Percentage of Reduction |
| • Governmental | Percentage of Reduction |
| • School       | Percentage of Reduction |
| • New Demand   | Per-capita              |

The specific percentage reductions at each stage for each customer class correspond to the data in Table 10. The individual customer's allotments could be figured on a five-year base period. This gives the City of Alhambra a more accurate view of the usual water needs of each account and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment would probably be greater than the amount used in the most recent year of the five-year base period.

The City's Utilities Department could classify each customer and calculate each customer's allotment according to the methods described above. The allotment would reflect seasonal patterns. Each customer would be notified of their classification and allotment by mail before the effective date of any Water Shortage Emergency. New customers and connections will be notified at the time service commences. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. An appeal process would be established to handle any concerns and/or issues that may arise.

#### **7.7 PENALTIES OR CHARGES FOR EXCESSIVE USE [Section 10632(f)]**

The City of Alhambra charges customers for excessive use during declared water shortages, as described below and as shown in the City of Alhambra's commodity charge in Appendix K.

- The essential tier applies only to residential accounts.
- Excess "1" tier applies to excess use during declared water shortages or violation of the "no waste" ordinance.
- Excess "2" tier applies to third consecutive excess use during declared water shortages or continued violation of the "no-waste" ordinance.

As per the Alhambra Municipal Code, service may be terminated to any customer who knowingly and willfully violates any provision of the Water Shortage Plan.

## **7.8 ANALYSIS OF THE IMPACTS OF THE PLAN ON REVENUES AND EXPENDITURES [Section 10632(g)]**

### **7.8.1 TEMPORARY WATER SHORTAGES**

Drought, natural disasters, and structural failures in water supply systems sometimes lead to temporary water shortages. The typical response to a temporary water shortage is curtailment of water supplies. From an economic point of view, the objective is to balance economic losses from occasional water shortages against the ongoing capital and maintenance costs.

### **7.8.2 ESTABLISHMENT OF A RATE STABILIZATION FUND**

In order to mitigate the financial impacts of a water shortage, the City of Alhambra has established an Emergency Reserve Fund. This fund could be used to stabilize revenue during periods of water shortage or disasters affecting the water supply. However, even with the Emergency Reserve Fund, rate increases may be necessary during a prolonged water shortage. A Stage 2 shortage requires a 20 percent reduction in water deliveries while a Stage 3 requires a 35 percent reduction. The experiences of California water purveyors during the 1990-91 drought shortage demonstrated that actual water use reductions by customers are usually larger than those requested by the supplier.

During the 1990-91 drought shortage it was difficult for many agencies to adopt the rate increases necessitated by a 20 to 50 percent reduction in sales. When a Water Shortage Emergency is declared, the supply shortage will trigger the appropriate Rationing Stage and rate increase. Water rate increases could be implemented by the following percentages when the indicated Stages are implemented:

- Stage 1:** No rate increase
- Stage 2:** 25 percent increase over pre-shortage rates
- Stage 3:** 50 percent increase over pre-shortage rates
- Stage 4:** 100 percent increase over pre-shortage rates

## **7.9 DRAFT WATER SHORTAGE CONTINGENCY RESOLUTION [Section 10632(h)]**

The City of Alhambra has adopted a Water Shortage Contingency Plan per City ordinance. A copy of the City of Alhambra's water shortage contingency ordinance is located in Appendix L.

## **7.10 WATER USE MONITORING PROCEDURES [Section 10632(i)]**

### **7.10.1 MAIN SAN GABRIEL BASIN PROCEDURES**

SGVMWD (of which the City is a member) keeps records of its water sales to its member agencies. These records are then used to determine seasonal and annual fluctuations in water usage. SGVMWD can compare total water sales from one year to the next to determine actual reductions in water use. Since the Replacement Water requirement is based on the Operating Safe Yield, the determination of actual reductions in water use can be evaluated by comparing actual water use and replacement-water use which is dependent on the local groundwater conditions.

SGVMWD also collects water-use data from its member cities. This data is compiled to demonstrate the effectiveness of water conservation efforts and is provided to the member cities.

### **7.10.2 CITY OF ALHAMBRA MONITORING PROCEDURES**

The City of Alhambra meters all service connections in its distribution system. The City maintains all of its meters and monitors them through its computerized billing system. Variations in water consumption are registered by the meters. The computerized billing system will flag any meter which registers a variation from its

normal demand. All meters that are flagged are investigated to determine if a problem exists with the meter or if an unusual water demand exists. All meters are tested, repaired and/or replaced if the need exists. The City of Alhambra has replaced approximately 99.9 percent of its meters with electronic touch-read meters. This will increase meter reading efficiency and accuracy and give the City expanded control in monitoring water consumption.

During normal water supply conditions, production figures are recorded daily. Totals are checked and noted daily by field personnel and reported to the Production Supervisor. Weekly totals are reported to the General Manager of Utilities. Monthly totals are reported to the local Watermaster and the appropriate basins in the Water Supply Report.

The following are procedures for each emergency stage:

- Stage 1 and 2 Water Shortages – During a Stage 1 or 2 water shortage, daily production figures are reported to the Pump Operations Supervisor. The Pump Operations Supervisor compares the weekly production to the target weekly production to verify that the reduction goals are being met. Weekly reports are forwarded to the General Manager of Utilities and the Water Shortage Response Team. Monthly reports are sent to the City Council. If reduction goals are not met, the Director of Utilities will notify the City Council so that corrective action can be taken.
- Stage 3 and 4 Water Shortages – During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the additions of a daily production report to the Director of Utilities and to the General Manager of Utilities.
- Disaster Shortage – During a disaster shortage, production figures will be reported to the Production Supervisor hourly, and to the General Manager of

Utilities and the Water Shortage Response Team daily. Reports will also be provided to the City Council and the appropriate Alhambra Emergency Services Coordinator(s).



## Chapter 8

### RECYCLED WATER

#### *Section 10633*

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*

#### **8.1 BACKGROUND**

In 1976 SGVMWD and USGVMWD completed a study entitled "Potential Use of Reclaimed Water for Groundwater Replenishment in the Basin." This study was updated at the request of the Basin Watermaster in 1980 and again in March 1987. In 1979, a cooperative study was completed by MWD and others entitled "Orange and Los Angeles Counties Water Reuse Study." These studies concluded that water reuse in the Main Basin could be feasible. However, the cost of utilizing recycled water varies widely with the quantity to be used and the distance required to divert the water from the treatment plant to the point of use. The City of Alhambra currently does not use recycled water and could not directly benefit from a large scale recycling project due to its distance from the source of supply. However, the City could receive indirect benefits from a large scale recycling project through the reduction on groundwater pumping in the Main Basin.

#### **8.2 WASTEWATER COLLECTION AND TREATMENT SYSTEMS [Section 10633(a)]**

##### *Section 10633*

*(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*

The Los Angeles County Sanitation District (CSD) operates two reclamation plants, which can be utilized by the Main Basin; Whittier Narrows Water Reclamation

Plant (WNWRP) and San Jose Creek Water Reclamation Plant (SJCWRP). The WNWRP began operation in 1962 and has a treatment capacity of about 15 million gallons per day (MGD). The SJCWRP began operation in 1973 and has a treatment capacity of about 100 MGD. Both treatment plants provide coagulated, filtered and disinfected tertiary effluent. The balance of effluent from both treatment plants is discharged to the San Gabriel River and eventually flows to the ocean. The locations of the reclamation plants are shown on Plate 6.

### 8.3 RECYCLED WATER USE [Section 10633(b)]

#### *Section 10633*

*(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

Currently recycled water is not being utilized within the City of Alhambra's service area. The City of Alhambra does not have an opportunity to incorporate recycled water into its supply at this time.

### 8.4 POTENTIAL USES OF RECYCLED WATER [Section 10633(c)]

#### *Section 10633*

*(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

SGVMWD along with USGVMWD in cooperation with Main Basin Watermaster, proposed to implement a water recycling/groundwater recharge program referred to as the San Gabriel Valley Recycled Water Demonstration Project. This project proposes to recharge the Main Basin using up to 10,000 acre-feet per year of tertiary treated recycled water. The source of the recycled water will be the SJCWRP and the point of recharge will be the San Gabriel River. Although the maximum amount of recycled water that would be recharged into the San Gabriel River in any year would be 10,000 acre-feet, in some years this amount is anticipated to be less due to Key Well limitations on groundwater recharge and other constraints. Recycled water recharge over the long term is anticipated to average about 8,000 acre-feet per year. The design portion of this

project has been completed; however, a study of the project's potential is still underway. The CSD is currently conducting a study on methods to provide additional treatment prior to use of recycled water for groundwater recharge.

## **8.5 PROJECTED USE OF RECYCLED WATER [Section 10633(d)]**

### *Section 10633*

*(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15 and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

In addition to the San Gabriel Valley Recycled Water Demonstration Project, SGVMWD, USGVMWD and CBMWD have entered into a Memorandum of Understanding (MOU) to identify the potential to expand use of recycled water. As a member of SGVMWD, the City of Alhambra could benefit from this study. However, the projected use of recycled water for the City of Alhambra for the next 20 years is uncertain until a plan is fully developed. Additional information regarding the MOU is located in SGVMWD's UWMP, which is incorporated by reference.

## **8.6 FUTURE PLANS FOR RECYCLED WATER [Section 10633(e) and (f)]**

### *Section 10633*

*(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*

*(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

The City of Alhambra in conjunction with SGVMWD may participate in projects that facilitate the use of recycled water within its service area. These projects are currently in their planning stages. Based on the results of the studies, a plan may be developed for potential recycled water use within the City. Because none of these projects have been constructed, it is premature to quantify possible financial incentives.

## Chapter 9

### WATER QUALITY

#### *Section 10634*

*The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

#### **9.1 INTRODUCTION [Section 10634(a)]**

The City of Alhambra supplies water to its customers from eight active wells in the Main Basin (Wells No. 7, 9, 11, 13, 14, 15, Longden 1, and Longden 2). In addition, Wells No. 8 and 12 are located in the Main Basin, but are inactive due to water quality concerns. The City of Alhambra Well No. 2 historically produced water from the Raymond Basin, but is currently inactive due to Nitrate concentrations above the drinking water standard.

#### **9.2 MAIN BASIN**

The City of Alhambra is not restricted in the quantity of groundwater that may be produced. Drawdown in the APH appears to have stabilized, as shown on Figure 2. The City of Alhambra has been vigilant in its management of water quality through implementation of blending programs, construction of treatment facilities and water quality monitoring. The City of Alhambra collects a significant amount of water quality samples for VOCs and Nitrates, in addition to that required by CDHS, to assist with water quality trending and potential identification of new contaminants.

The City of Alhambra is cooperating with EPA in its investigation of the Area 3 Operable Unit (OU). EPA has constructed several water quality monitoring wells and preliminarily identified entities that may have contributed to groundwater contamination. The City of Alhambra is developing its water treatment facilities to complement potential cleanup projects contemplated by EPA for the Area 3 OU.

The City of Alhambra is also represented on the WQA by representatives appointed by 1) SGVMWD and 2) as a city with water rights in the Main Basin. The WQA assists with funding Main Basin cleanup projects.

As a result of EPA/City of Alhambra's water quality monitoring and plans to construct treatment facilities, water quality should not limit the City of Alhambra's ability to produce a reliable supply over the next 20 years.

### **9.3 RAYMOND BASIN**

The City of Alhambra historically operated its Well 2 in the Raymond Basin. That well has not been in use recently as a result of Nitrate in excess of drinking water standards. Although not essential for water supply, the City of Alhambra is developing a blending plan to reactivate Well 2.

### **9.4 IMPORTED WATER FROM MWD [Section 10634(a)]**

Imported water from MWD makes up about 25 percent of the City of Alhambra's water supply. MWD's draft 2005 RUWMP discusses the quality of its water source, its approaches to ensuring acceptable water quality, the impacts on water management strategies and the impacts on supply reliability, which is incorporated by reference.

## Chapter 10

### WATER SERVICE RELIABILITY

#### *Section 10635*

- (a) *Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry year water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

#### **10.1 ASSESSMENT OF THE RELIABILITY OF WATER SUPPLY [Section 10635(a)]**

The City of Alhambra obtains its water supply from groundwater wells located in the Main Basin and Raymond Basin. The management structure of these two basins ensures future water supply for the City. Chapter 3 provides a description of the management of water resources in the Main Basin and Raymond Basin, as well as provides information on their management. Chapter 3 demonstrates the management structure of the Main Basin and Raymond Basin provides a reliable source of groundwater supply for the City of Alhambra in an average, single-dry and multiple-dry water years. Historic data presented in Table 2 indicate the City of Alhambra's groundwater supply has remained relatively stable for over 40 years. The City of Alhambra will continue to use groundwater as its future supplies over the next 20 years and these supplies have been determined to be adequate, as shown on Tables 13 through 16. Table 13 shows the reliability of the City's water supply in year 2010. Table 14 shows the reliability of the City's water supply in year 2015. Table 15 shows the reliability of the City's water supply in year 2020 and Table 16 shows the reliability of the City's water supply in year 2025.

In addition to groundwater, the City of Alhambra can purchase imported water from MWD. A summary of available water supplies during 1) average water year, 2) single dry water year, and 3) multiple dry water year for the next 20 years, in five-year increments, are included in MWD's draft 2005 RUWMP, which is incorporated by reference. Based on MWD's draft 2005 RUWMP, MWD will be able to continue to meet its water demands under an average water year, a single dry water year and multiple dry water years. More details can be found in MWD's draft 2005 RUWMP.